

## CLAIMS

1. In a communication network, a method of allocating a second path of communication for use as a protection path for  
5 a first communication path, wherein the allocation is made in accordance with a chosen risk level definition, which method comprises:

(i) providing data corresponding to physical and geographical deployment of a plurality of communication  
10 segments belonging to the communication network;

(ii) selecting N number of risk levels based on predefined criteria;

(iii) for each of said N number of risk levels, assigning said plurality of communication segments to a plurality of  
15 SRGs so that all communication segments belonging to any specific SRG are at risk of being damaged by a single damage event, where the probability of occurrence of such an event is represented by the risk level assigned to the specific SRG;

(iv) choosing a first path of communication comprising a first group of communication segments selected from among  
20 said plurality of communication segments belonging to the communication network;

(v) defining a risk level R which represents the highest  
25 risk level to be prevented; and

(vi) selecting a second group of communication segments from among said plurality of communication segments  
30 belonging to said communication network to establish said second communication path, wherein said second group of communication segments satisfies the following conditions:

one of the selected segments of said second group starts at the starting point of the first path of communication;

one of the selected segments of said second group ends at the end point of the first path of communication;

all communication segments belonging to the second group comprise one continuous path starting at the starting point of the first path and ending at the end point of the first path; and

there is no SRG to which the risk level R or lower was assigned, that contains both a communication segment belonging to the first communication path and a communication segment belonging to the second communication path.

2. A method according to claim 1, further comprising:

(vii) determining whether a second communication path, for which the selection conditions defined hold with respect to said first communication path, is found;

(viii) if not found, selecting a different first communication path, having the same starting point and ending point as the original first communication path;

(ix) repeating the step of selecting a second group of communication segments with respect to said different first communication path;

(x) determining whether a second communication path, for which the selection conditions defined hold with respect to said different first communication path, is found; and

(xi) repeating steps (vii) to (x) *mutatis mutandis*, if the outcome of step (x) is negative.

3. The method according to claim 1, wherein said data comprises characterization of the communication segments according to physical characteristics or location, such as: a sheath; a duct; a conduit; a reinforced conduit; a right-of-way (ROW); communication equipment; a crossing duct point of presence (POP); and a power generator.

4. The method according to claim 1, wherein said communication network is a member of a group comprising: an optical communication network, a datacom network, a synchronous network, and any combination thereof.

5. The method according to claim 1, wherein said communication network comprises an optical telecommunication network.

6. A device for allocating a second path of communication for use as a protection path for a first communication path, wherein the allocation is made in accordance with a chosen risk level definition, the device comprising:

a database comprising data corresponding to physical and geographical deployment of a plurality of communication segments belonging to a communication network, wherein said communication segments are assigned to a plurality of SRGs for each of N number of risk levels, so that all communication segments belonging to any specific SRG are at risk of being damaged by a single damage event, where the probability of occurrence of such an event is represented by the risk level assigned to the specific SRG;

an input/output (I/O) unit operative to receive a required input risk level; and

a processor operatively associated with the database and the I/O unit and operative to select a second group of communication segments from among said plurality of communication segments to establish said second communication path, wherein said second group of communication segments satisfies the following conditions:

one of the selected segments of said second group starts at the starting point of the first path of communication;

one of the selected segments of said second group ends at the end point of the first path of communication;

all communication segments belonging to the second group comprise one continuous path starting at the starting point of the first path and ending at the end point of the first path; and

there is no SRG to which the risk level R or lower was assigned, that contains both a communication segment belonging to the first communication path and a communication segment belonging to the second communication path.

7. The device according to claim 6, adapted to operate in a network in which diverse routing of protection paths in needed.

8. The device according to claim 7, wherein said network is an optical communication network.